

REMARKS

I. Status of the Claims

In this Amendment, Applicants have amended the title. Claims 1-4, 6, and 8-9 are pending in the application. Without prejudice or disclaimer, claims 5 and 7 have been cancelled. Further without prejudice or disclaimer, claims 1-4, 6, and 8-9 have been amended. Exemplary support for these amendments can be found in the specification and claims as filed. Accordingly, no new matter is added by the amendments provided herein.

II. Rejection under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-9 under 35 U.S.C. § 103(a) as allegedly “being unpatentable” over U.S. Patent No. 6,217,748 to Hatanaka et al. (“Hatanaka”) in view of U.S. Patent No. 5,741,414 to Waku et al. (“Waku”). See Office Action at pages 2-6.

In particular, the Examiner asserts that Hatanaka “discloses a process for hydrotreatment of a gas oil fraction,” and although Hatanaka “does not specifically disclose sulfur content of the finally produced ultralow sulfur gas oil fraction, however, the invention does disclose, ‘[t]he sulfur content in the diesel gas oil product can be decided arbitrarily if necessary, and a necessary desulfurization ratio can be achieved by the optimization of reactive conditions of reaction temperature’” *Id.* at page 3. The Examiner concludes that “[o]bviously, the conditions in the hydrotreating process can be adjusted to achieve any desulfurization ratio” and “it would have been obvious to . . . modify Hatanaka invention and specify the sulfur content . . . which is expected to be in a range as claimed because Hatanaka invention can produce an ultralow sulfur gas oil fraction with the target sulfur content.” *Id.* Applicants respectfully traverse the rejection for at least the following reasons.

Several basic factual inquiries must be made in order to determine whether the claims of a patent application are obvious under 35 U.S.C. § 103. These factual inquiries, set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), require the Examiner to:

- (1) Determine the scope and content of the prior art;
- (2) Ascertain the differences between the prior art and the claims in issue;
- (3) Resolve the level of ordinary skill in the pertinent art; and
- (4) Evaluate evidence of secondary considerations.

The obviousness or non-obviousness of the claimed invention is then evaluated in view of the results of these inquiries. *Graham*, 383 U.S. at 17-18, 148 U.S.P.Q. at 467; see also M.P.E.P. § 2141 (II). It is important to note that in this evaluation the references must be considered in their entirety, i.e., as a whole, including portions that would lead away from the claimed invention. See M.P.E.P. § 2141.02(vi), citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Further, “rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” M.P.E.P. § 2142 (citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)); see also *KSR*, 127 S. Ct. at 1741, 82 U.S.P.Q.2d at 1396 (quoting the Federal Circuit statement with approval).

Applicants submit that in light of the above-cited guidance from the M.P.E.P., the Examiner fails to satisfy the initial burden of establishing a *prima facie* case of obviousness.

Specifically, the Examiner provides “mere conclusory statements” and fails to articulate “reasoning with some rational underpinning” for why Hatanaka “can produce

an ultralow sulfur gas oil fraction with the target sulfur content." Hatanaka teaches a hydrodesulfurization process that provides a diesel gas oil product that "may have a sulfur content of 0.01 wt % or less . . ." *Id.* at col. 3, ll. 46-50; see also claim 1. Further, the exemplified compositions of Hatanaka result in a sulfur content of 0.009 wt % (Example 1), 0.005 wt % (Example 3), and 0.003 wt % (Example 4). Col. 7, line 65 - col. 9, line 50. In contrast, the claimed process yields gas oil fractions comprising sulfur in an amount of not greater than 1ppm (i.e., 0.0001%), a much lower sulfur content in oil fractions than any disclosed in Hatanaka. Despite the Examiner's assertion that "the conditions in the hydrotreating process [of Hatanaka] can be adjusted to achieve any desulfurization ratio," there is no such evidence in Hatanaka that teaches or suggests that the process disclosed therein is even capable of producing gas oil fractions with a sulfur content of not greater than 1ppm, as instantly claimed. Moreover, the Examiner has failed to propose any particular modification in the process of Hatanaka that would allow gas oil fractions with a sulfur content in an amount of not greater than 1ppm. It was an unexpected and unobvious result for the present inventors to find the presently claimed process to result in gas oil fractions with a sulfur content in an amount of not greater than 1ppm. See specification as-filed at page 4, paragraph [0009].

Further, claim 1, as-amended, recites "a hydrogenation catalyst including at least one active metal selected from the group consisting of Ru, Rh, Ir, Pd and Pt." Although Hatanaka discloses a broad list of possible catalysts, Hatanaka specifically prefers to use "catalysts where cobalt and molybdenum are supported on a porous carrier containing alumina as a main ingredient . . . because said catalysts show higher

desulfurization efficiency" *Id.* at col. 4, ll. 26-39. Thus, in view of this teaching, one of ordinary skill in the art would choose "catalysts where cobalt and molybdenum are supported on a porous carrier containing alumina" in an attempt to lower sulfur content of gas oil fractions, and not catalysts chosen from Ru, Rh, Ir, Pd and Pt, as required in the present claims.

Moreover, as the Examiner concedes, Hatanaka fails to disclose an aromatic content of the gas oil fractions. Thus, the Examiner relies on Waku "to specify the aromatics content along with the sulfur content of the gas oil." The Examiner admits that "Waku does not specifically disclose monocyclic and bicyclic aromatics content," regardless the Examiner concludes that "it would have been obvious to one skilled in the art at the time of invention to specify the monocyclic and bicyclic aromatics content for proper characterization of the finished gas oil." Office Action at page 4. However, Waku does not remedy the deficiencies of Hatanaka. Rather, in both Tables 1 and 2 of Waku, the aromatic compounds content shown is 17% (Example 1) and 9% (Example 2), which are both much higher than the claimed aromatic content not greater than 1% by volume. Further, the sulfur content is shown to be 0.030% (Example 1) and 0.009% (Example 2), which are both higher than the claimed sulfur content in an amount of not greater than 1ppm. The Examiner cannot point to any evidence in Waku that would suggest that its disclosed process is even capable of resulting in gas oil fractions with an aromatic content and a sulfur content as low as currently claimed. Thus, the Examiner has not established a *prima facie* case of obviousness over the combination of Hatanaka and Waku, and Applicants respectfully request that the Examiner withdraw this rejection.

III. Conclusion

In view of the remarks, Applicant submits that this claimed invention is not rendered obvious in view of the prior art cited against this application. Applicant therefore requests reconsideration of the application, and the timely allowance of the pending claims.

If the Examiner believes a telephone conference could be useful in resolving any of the outstanding issues, the Examiner is respectfully urged to contact Applicant's undersigned counsel at 202-408-4368.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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